

AC/DC power supplies

KWadr Family KWadr5000, 5 kW



Family description

Hi-rel universal AC/DC converters. Output voltage up to 350 VDC, efficiency up to 95% and EMC Class B (EN55022 (CISPR22)).

Built-in digital control allows integrating of KWadr5000 into high power platforms fulfilling different tasks thanks to wide range of adjustments and service functions.

Intelligent active cooling decreases noise pollution, increases life of fans and improves operation temperature mode.

Features

- ◀ Input voltage: ~220 VAC (single phase)
- ◀ Efficiency up to 95 %
- ◀ Output voltage up to 350 VDC
- ◀ Wide range of voltage and current adjustment
- ◀ RS-485 – digital control and monitor interface
- ◀ Programmable operation mode: current or voltage source
- ◀ Compact design – power density up to 19 W/in³

[Hot swap, see page 4](#)

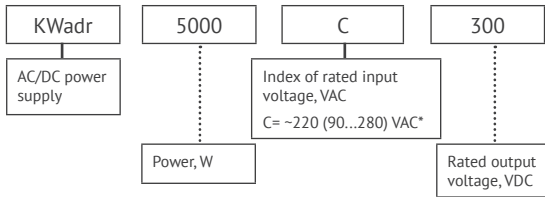
[Modular type](#)

[Multi-purpose application](#)



Technical support
techsupport@kwsystems.ru

Ordering information



Output specifications**

Parameter	Value						
Unit name	KWadr5000C30	KWadr5000C60	KWadr5000C110	KWadr5000C140	KWadr5000C250	KWadr 5000C300	KWadr 5000C350
Rated output voltage, VDC	30	60	110	140	250	300	350
Efficiency, %	90	92	92	92	95		95
Rated output current, A	166.6	83.3	45.4	35,7	20	16.7	14,28
Output current adjustment range, %***	0... 100						
Output voltage adjustment range, VDC	20-30	30-60	70-110	70-140	1-250	1-300	175-300
Ripple and noise (p-p)	2 %	2 %	2 %	2 %	<1 %		
Total voltage regulation, %	Input voltage variation 90-280 VAC	2 %	2 %	2 %	<5 %		
	Output current variation 0-100 %	max 2					
Output voltage transient deviation Vs 10-100-10 % load	max 5 % Uout. nom						
Transient time	20 ms						
Parallel mode	up to 20 units***						
Remote on/off	off at 4.5...5.5 VDC (15...30 mA) output «POWER OFF»						
Output health signal	dry contact, closed – OK						
Start-up time	up to 2.5-4.5 s after power on 2 s after supplying signal to Remote On/Off pins						
Maximum load capacity	-				16000 µF		

Input specifications**

Parameter	Value	
Mains type	single-phase 220 VAC	310 VDC
Input voltage range, VAC	90...280	100...380****
Rated input voltage range, (without derating)	174...264 VAC	245...372 VDC
AC mains frequency, Hz	45-65	0
PFC	active	
Power factor	≥0,95 with full load	
EMC	IEC 61000-3-12:2004 MIL-STD-461E CE102	
EMI	IEC 61000-6-4:2006 MIL-STD-461E RE102	

* For KWadr5000CXXX.

** All specifications are valid for normal climatic conditions (ambient temp. +15...+35°C; relative humidity 45...80%; air pressure 8,6*10⁴...10,6*10⁴ Pa), Uin.nom., Iout.nom., unless otherwise stated.

*** In case the output current is stabilized.

**** When input voltage decreases from 174 down to 90 VAC, the output power decreases linearly down to 2000 W.

Protections

Type of protection	single-phase 220 VAC	310 VDC
Overheat protection	internal with hysreresis at +100°C	
Overvoltage protection, software	300 B	410 B
Overvoltage protection, vriable resistor	320 B	420 B
Overcurrent protection	>105 % Inom	
Short-circuit protection (with Uout. less then 50 VDC)	auto recovery	

Basic specifications

Parameter		Value
Compliance	EN60950-1	+
	EN55022, EN55024	+
Ambient temperature	operating	-20...+50°C (custom -40...+50°C) -20...+80°C with derating
	storage	-55...+70°C
Isolation voltage	input/case	2500 VAC
	input/output	2500 VAC
	output/case	1500 VAC
Isolation resistance		≥ 20 MOhm
Cooling		built-in forced fan, adaptive
MTBF		max 3 600 000 hrs
Case material		metal
Dimensions		475×140×63 mm
Weight, kg		max 6
Warranty		2 years

Digital interface

Specifications of digital interface (option)	
Control interface	RS-485, isolated
Number of units connected to RS-485 network	up to 30, separate and group control
Control device	PC with Win XP, 7, 8

Standard functions

Inrush current limitation.

Overcurrent protection.

Remote sence cut-off protection (overvoltage >105 % Uout. max).

Remote on/off.

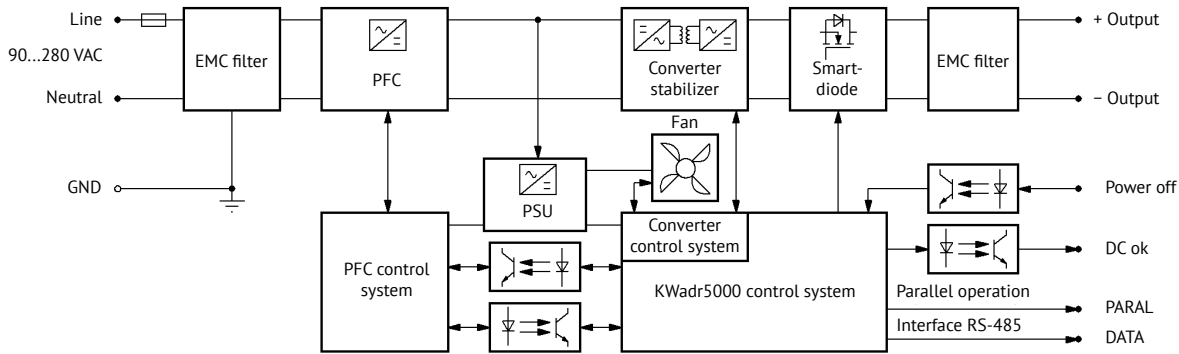
Mounting flanges.

Optional functions

Customized output voltage.

Different algorithms of thermal protection.

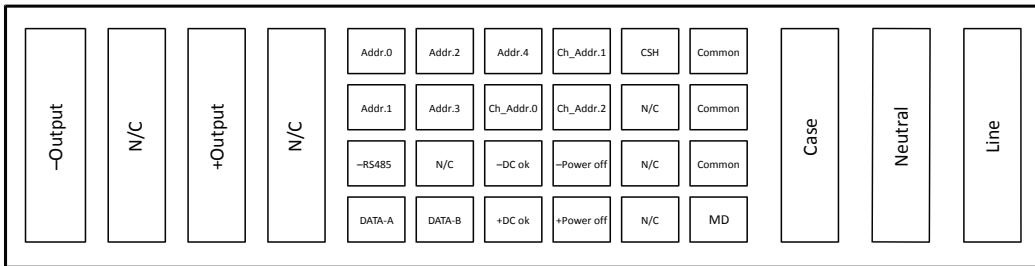
Block diagram



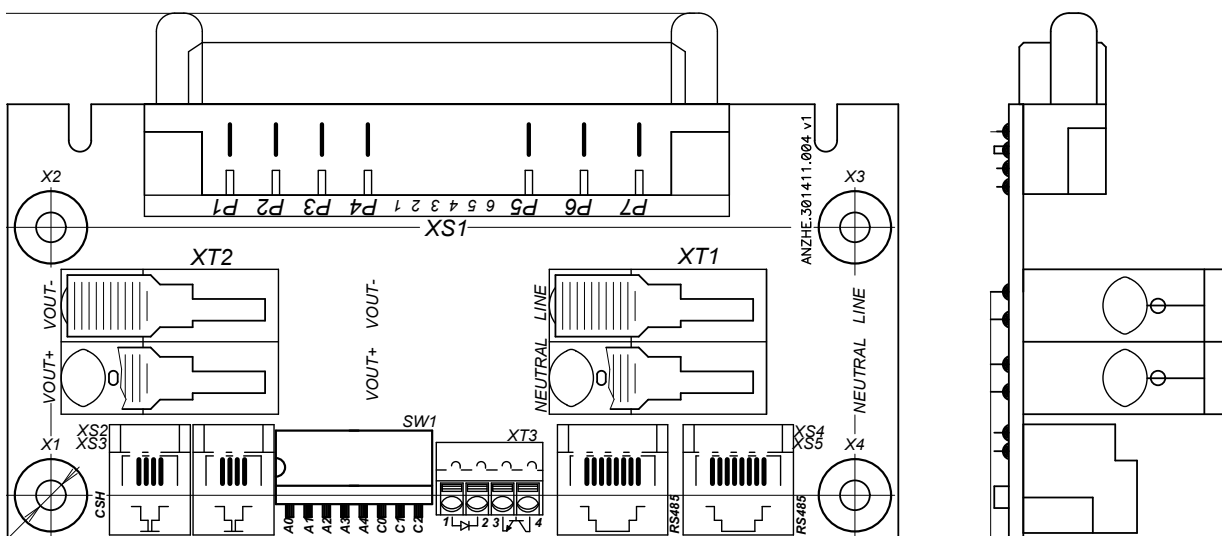
External connector

Connector type (block section): 1-6450130-4 «TE Connectivity» MBXL R/A HDR 4P+24S+3ACP

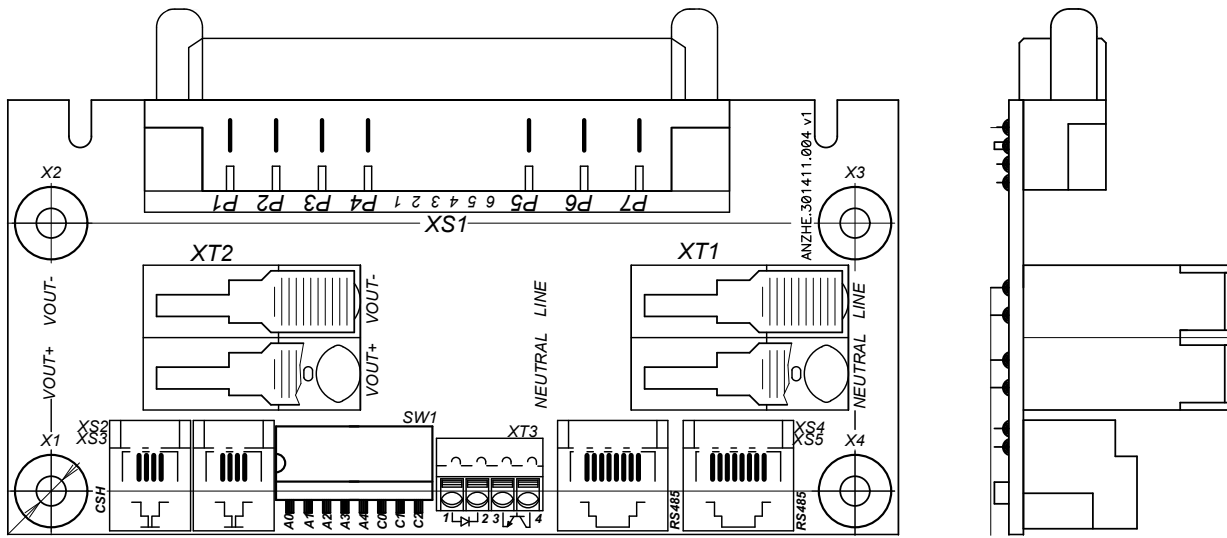
Mating connector type: 1-6450170-8 «TE Connectivity» MBXL R/A RCPT 3ACP+24S+4P



KWadr5000 connection board pinout



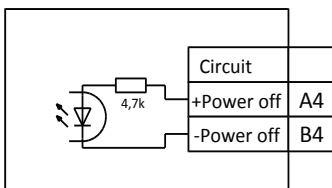
KWadr5000 connection board pinout



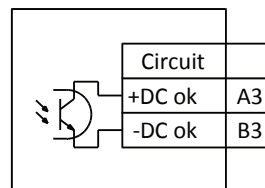
For separate use of KWadr5000 unit it is necessary to use KWadr5000 connection board. If KWadr5000 unit is used with KAP-series the KWadr5000 connection board is not necessary. Dimensions of KWadr5000 connection board see at page 10.

Discrete control circuit layouts

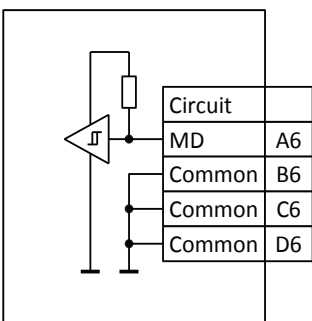
Remote power off signal



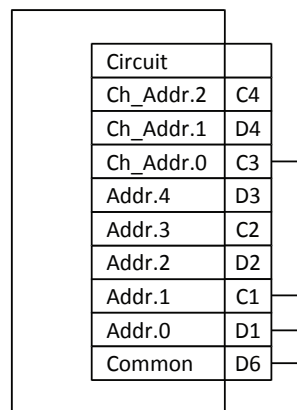
Module operation condition DC-OK signal



Disconnection detection layout



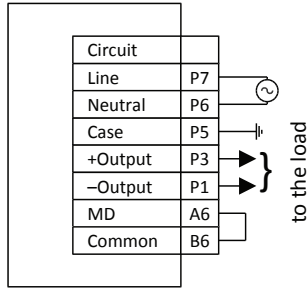
Example of converter address set-up



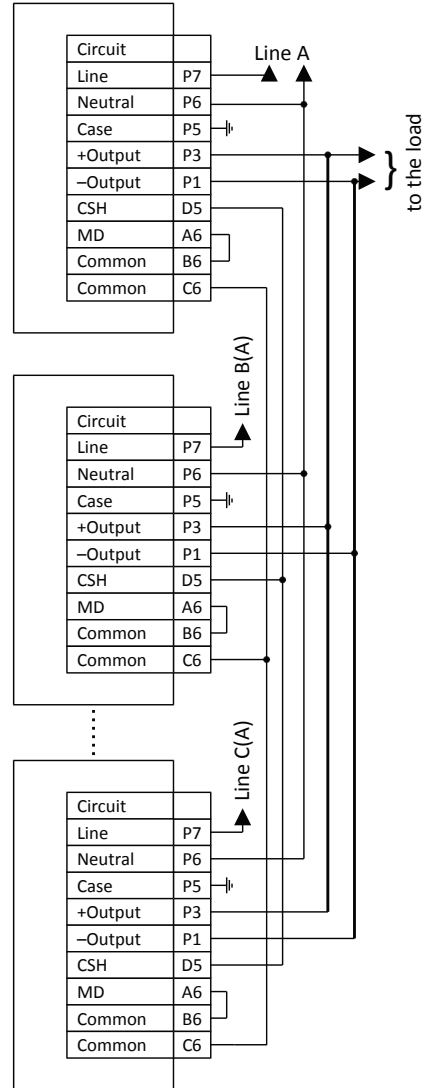
Address: 11011100b-DCh-220

Connection diagrams of KWadr5000

Single type connection

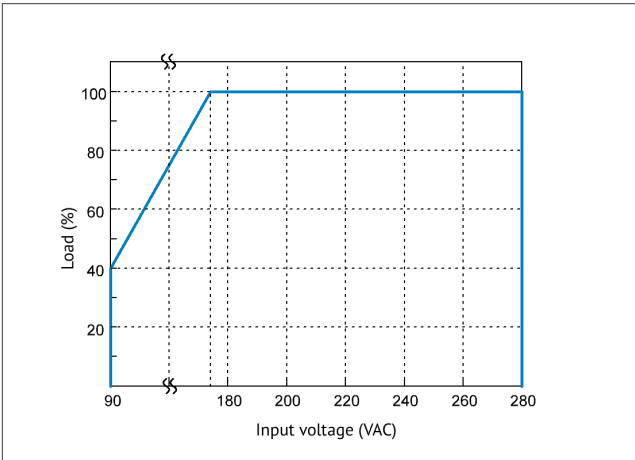


Parallel operation of several units

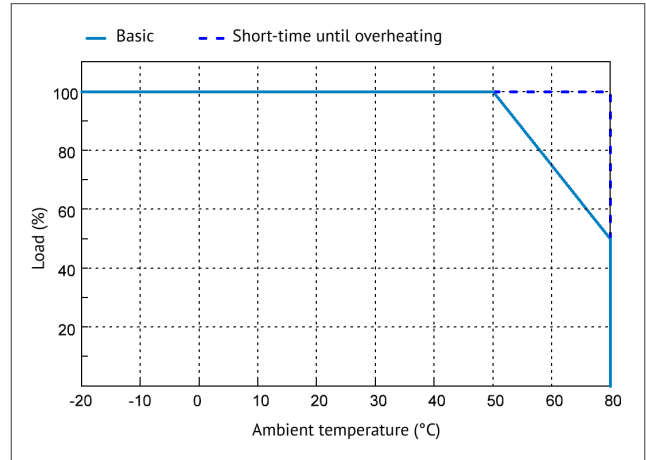


Derating

vs Input Voltage



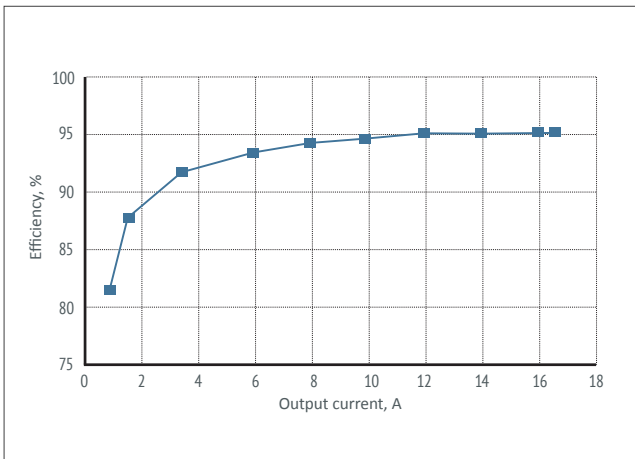
vs Temperature



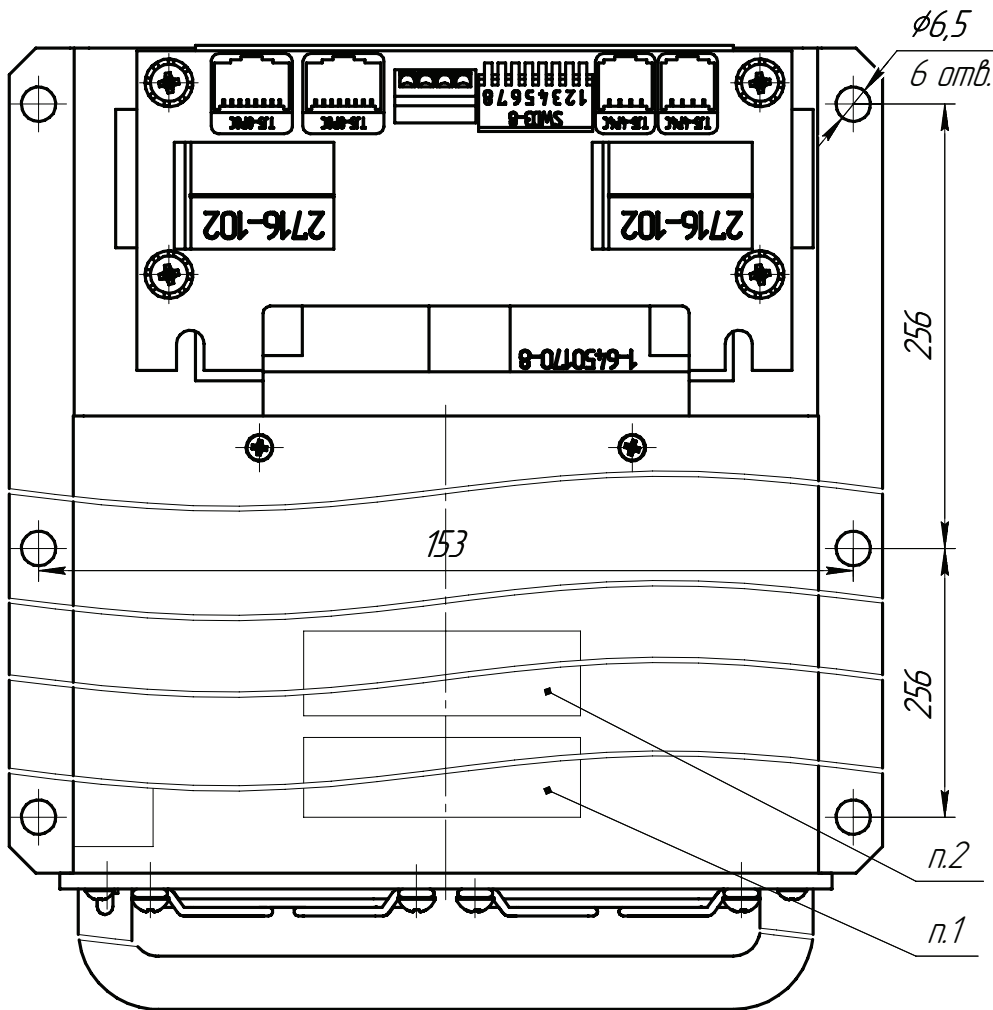
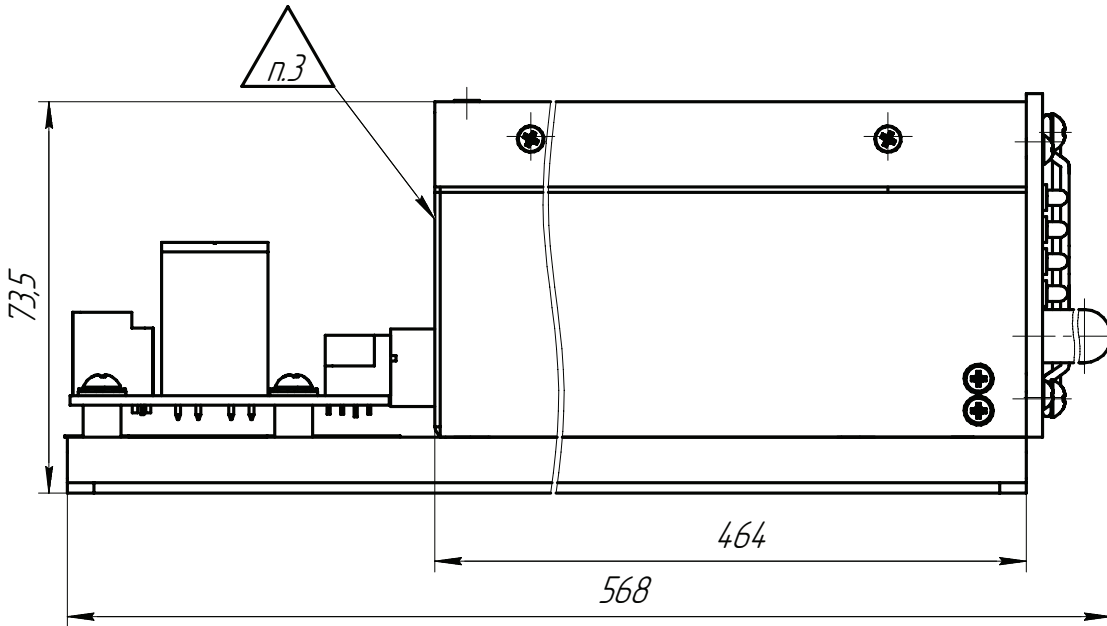
Diagrams show results of testing KWadr5000C300, vertical axis relates to the Load (%).

Efficiency

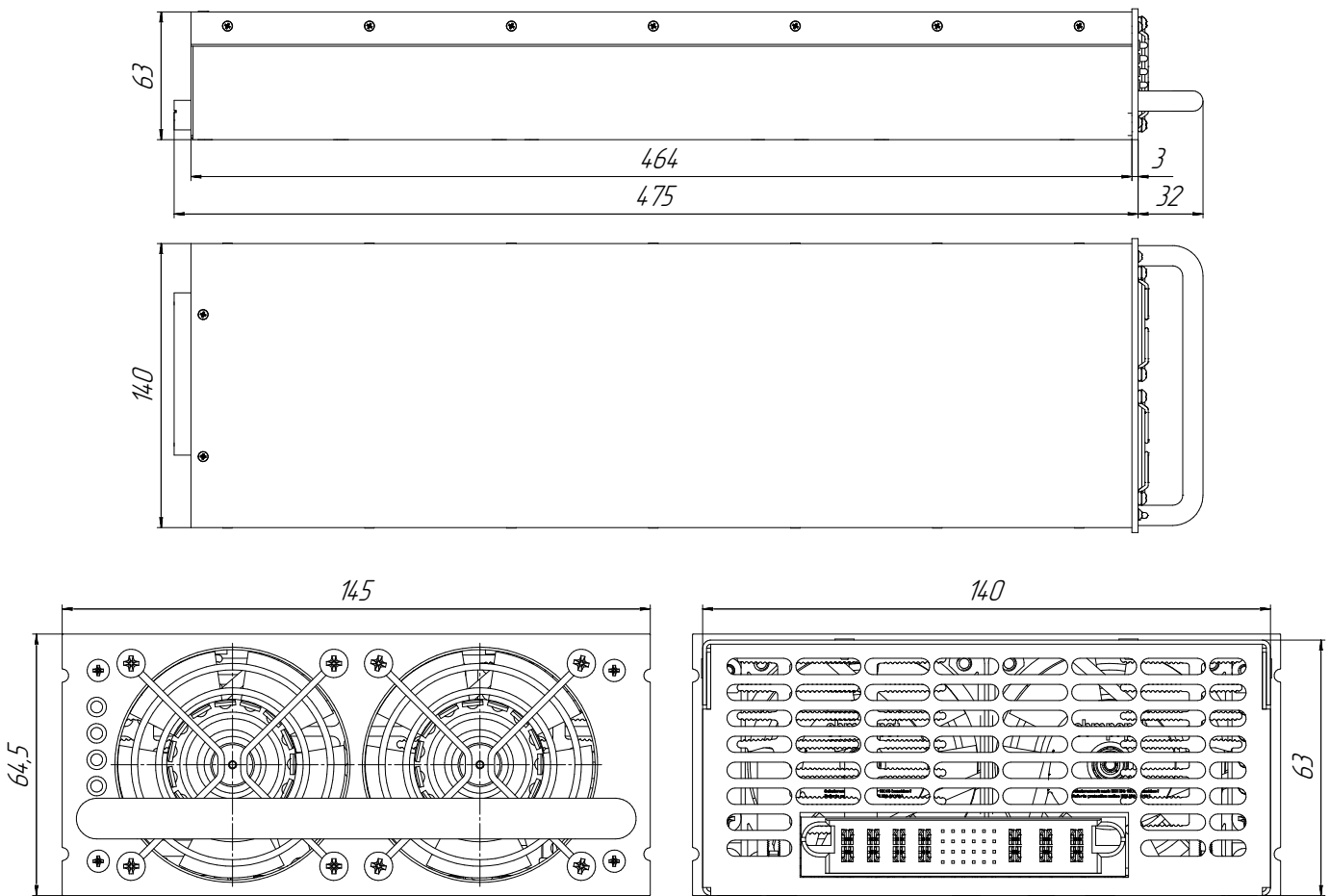
Efficiency of KWadr5000C300 vs output current



Dimensions of KWadr5000CXXX with connection board



Dimensions of KWadr5000CXXX

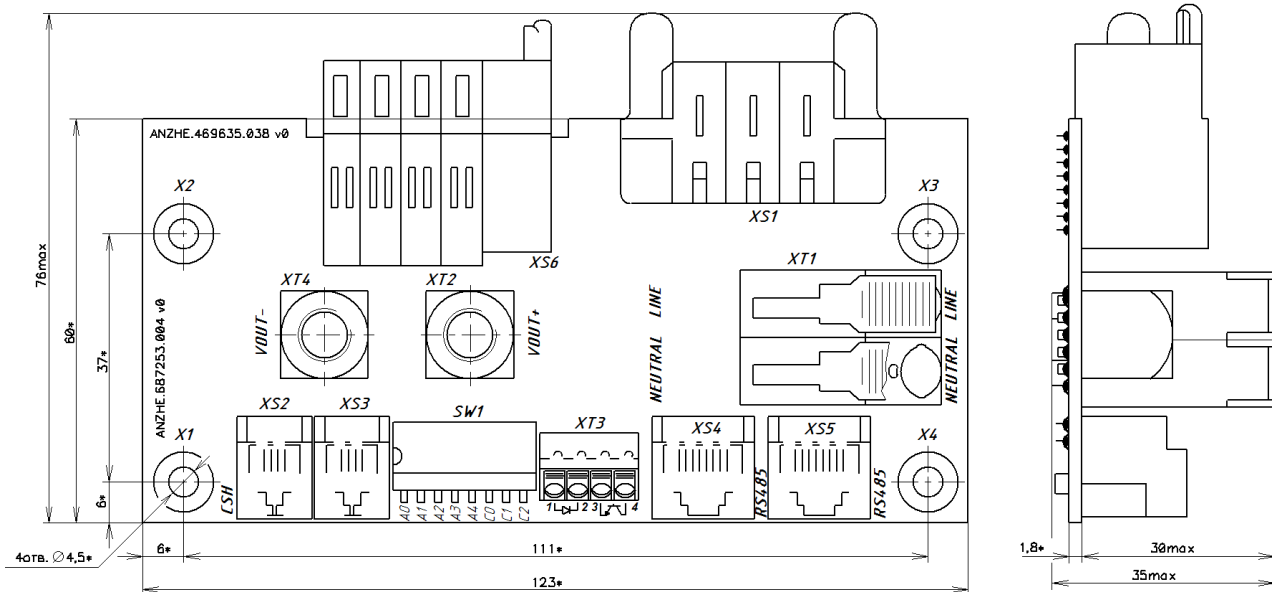
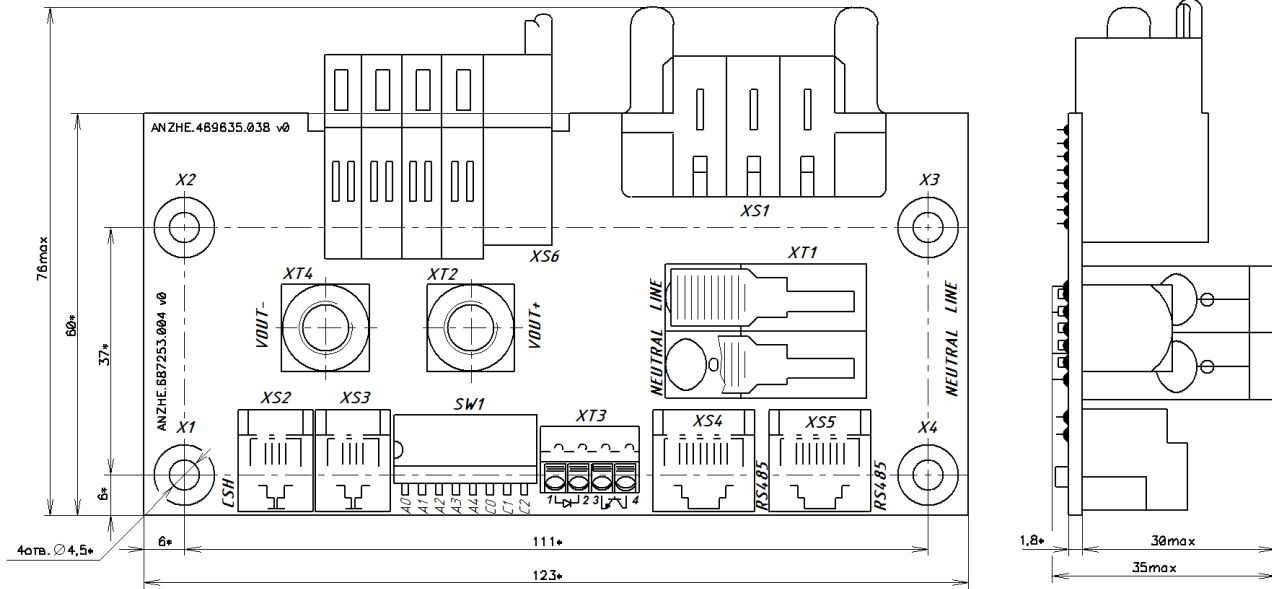


LED meaning

Symbol	LED	Meaning	Permanent	Blinking	PSU condition
~	green	MAINS	●		mains voltage within rated range (174–280 VAC)
				●	mains voltage low (90–174 VAC)
U	green	Ustab.	●		output voltage stabilization
				●	power-off command received
I	green	Ustab.	●		output current stabilization / overload
				●	power-off command received
🔔	red	error	●		failure, mains is out of operating range, overheating, overvoltage
				●	fan failure

Dimensions of connection board

Connection board for KWadr5000C30(60)





KW Systems, LLC is the leading Russian developer and manufacturer of AC/DC converters and power supply systems for mission critical applications.